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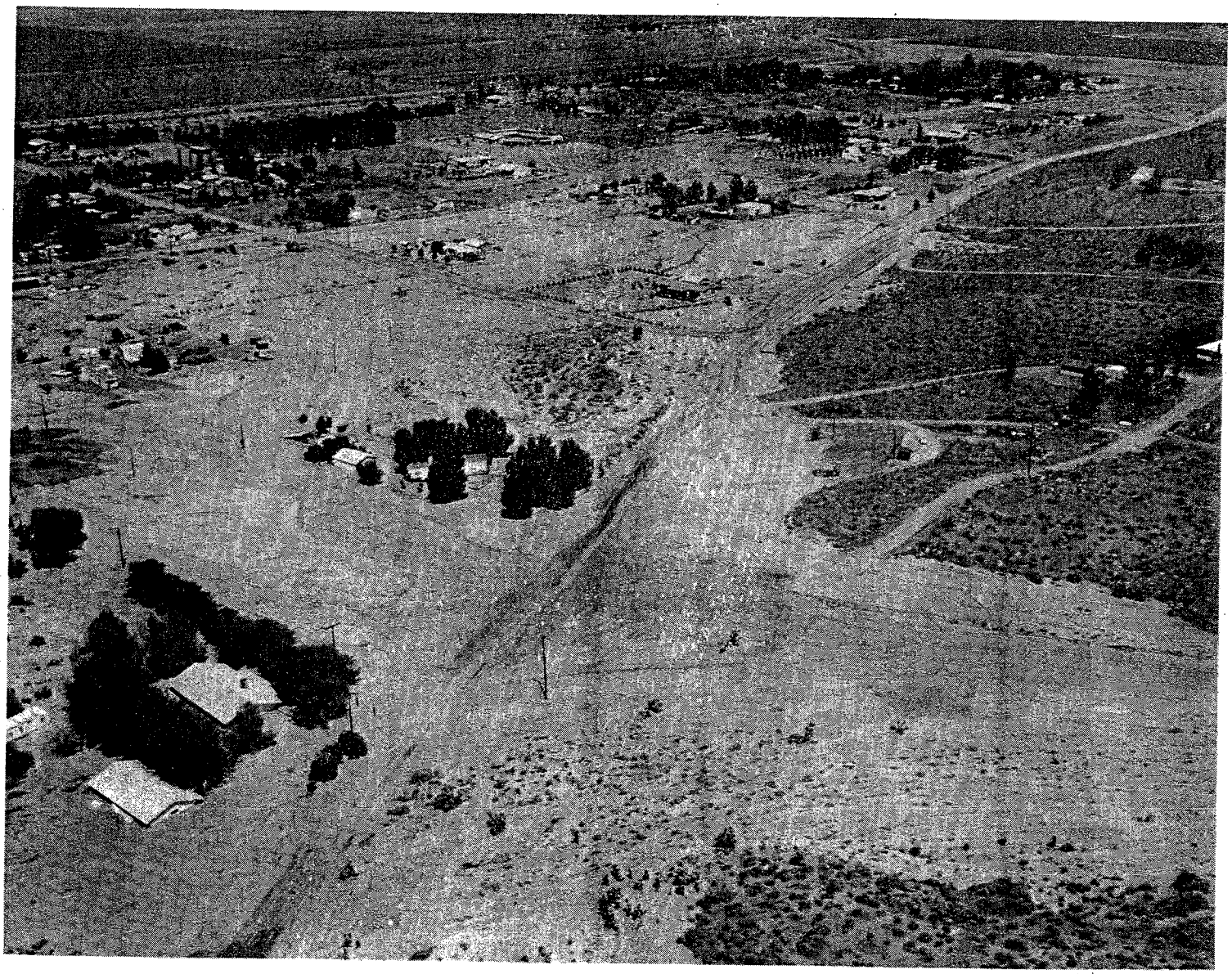
REPORT ON 100-YEAR FLOODPLAIN DELINEATION

FOR

KELSO CREEK AND SHORT, CHOLLO AND CANE CANYONS

WELDON AREA

KCWA ID-3



KERN COUNTY WATER AGENCY

BAKERSFIELD CALIFORNIA

Report on 100-year Floodplain Delineation

For

Kelso Creek and Short, Chollo and Cane Canyons

Weldon Area

KCWA ID-3

Kern County Water Agency
Bakersfield California

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April, 1985

Cover Photo: Short Canyon Alluvial Fan, showing damages from the July 30, 1984 flood. Photo looking northwest.

Photo By: Kern County Public Works Department

AUTHORITY

Section 4.1 of the Kern County Water Agency Act empowers the Agency to engage in flood control activities, as follows:

> The agency shall have the power to control the flood and storm waters within the agency and the flood and storm waters of streams that have their sources outside of the agency, and to conserve such waters for beneficial and useful purposes of said agency by spreading, storing, retaining and percolating into the soil within or without said agency, or to save or conserve in any manner all of any of such waters and protect from damage from such flood or storm waters the watercourses, watershed, public highways, life and property in said agency, and the watercourses outside of the agency of streams flowing into the agency.

In exercise of this power the Agency cooperates with County departments in carrying out the flood control activities of Kern County. This cooperation was instituted with approval of the County Board of Supervisors in 1968, because of the Agency's activities in the field of water resources and because of the technical expertise of the Agency staff and consultants in the field of flood control. The Agency maintains frequent contact with State, Federal and County governments in California which have water-related responsibilities.

BACKGROUND

On November 19, 1981, the Agency received a proposed floodway map for Kelso Creek from the Boyle Engineering Corporation, Flood Insurance Study contractor for FEMA. The location of the Kelso Creek floodway was computed by assuming encroachment of development toward the westerly bluff sufficient to create a 1.0 foot rise in the 100-year water surface elevations of Kelso Creek. As part of the Agency's cooperation with the County in floodplain management, the Agency reviewed the proposed floodway location and met with Boyle and FEMA on October 14, 1982, to discuss the floodway. At that time, FEMA made it clear that the location of the floodway was fixed. FEMA's opinion was that the Kelso Creek levee did not meet FEMA's "Interim Levee Policy"[1/] requirements and that even if the levee were removed the main Kelso Creek channel would remain along the westerly bluff.

At that October 14, 1982, meeting, FEMA also stated that they would not determine the floodway delineation of the Kelso Creek tributaries; Short, Chollo and Cane Canyons for their Flood Boundary Floodway Map. The tributaries had not been specified in FEMA's contract with Boyle Engineering. The Agency had been using a previous floodway study done by the U.S. Army Corps of Engineers for these tributaries, to make flood hazard recommendations to the

1/ FEMA "Interim Levee Policy" states that in order for a levee to be considered as providing 100-year flood protection for a community, the levee must have 3.0 feet of freeboard above the 100-year water surface elevations and must have a public maintenance entity.

County. Therefore, we believed it was necessary to include the Corps' tributary floodways on FEMA's map to provide a complete floodplain map. Noting that the topography supplied by the FEMA study for Kelso Creek was more recent than the topography used for the 1976 Corps tributary study, on November 9, 1982, the Agency requested the Corps to redelineate the floodway for the Kelso tributaries. This was received on March 9, 1983.

Under the FEMA Floodplain Management Criteria, a community is obligated to use the best flood information available to review flood hazard when development is requested within a floodplain. Since FEMA had fixed the floodway boundaries on their October 1982, map, the Agency had to base their recommendations to the County for proposed development on that map. This resulted in the County requiring restrictions on development within the indicated floodway. The Agency began making their recommendations in December, 1982. After several Building Permits and Zone Changes were denied by the Public Works and Planning Departments, the County Board of Supervisors received public requests for clarification of the Kelso Creek area floodplain zones. Specifically, the Board of Supervisors directed the Public Works Department to get together with the County Administrative Officer, County Counsel, Planning and the Assessor to prepare a response to a letter submitted to the Board at the August 23, 1983, Board hearing. On September 7, 1983,

the above County departments met with the Agency. As a result of that meeting, on September 9, 1983, the Agency submitted a map showing the Kelso Creek and Short, Chollo and Cane Canyon Floodplain-Primary and Floodplain-Secondary Zones to the County Board of Supervisors. The Board then asked the Planning Department on September 20, 1983, to start rezoning procedures for the areas delineated on the Agency's recommended map.

During the summer of 1984, several large floods occurred on Short and Chollo Canyons. Sediment deposits as high as 8 feet above pre-flood ground elevations filled the old Chollo Canyon Floodplain-Primary Zone. Because of the changed topography, on August 27, 1984, the Agency requested the Board of Supervisors to defer consideration of the zoning as submitted on September 9, 1983, pending a restudy based on the new topographic features of the area. The encroachment limits (Floodplain-Primary Zone limits) for the tributaries shown on the revised map are based on reductions in equal hydraulic conveyance from both sides of the floodplain, where possible, to the point at which the 100-year water surface elevations of the tributaries would rise 1.0 foot. Also, both the Short Canyon and Chollo Canyon alluvial fans have been labeled Floodplain-Primary Zones, due to the high depths, velocities and sediment loads associated with flood flows from each of these canyons.

This report and enclosed maps describe and show the revised location of the Floodplain-Primary Zones for Short, Chollo and Cane Canyons as well as the original Floodplain-Primary (Floodway) and Floodplain-Secondary Zones for Kelso Creek.

RESULTS

The results of our study presented on the accompanying maps depict the Floodplain-Primary Zone (dark blue area on the photo base map) and the Floodplain-Secondary Zone (light blue area on the photo base map). The Floodplain-Primary Zone is an area where structural development is not recommended except for certain agricultural and grading practices. The Floodplain-Secondary Zone is an encroachment area where structures are permitted provided that all structures are elevated and/or flood protected to at least one foot above the original 100-year water surface elevations or flow depth of Kelso Creek. The 100-year water surface profile elevations of Kelso Creek are on file at the Public Works Department and the Agency office. The 100-year flood peak flows for the tributaries are established from the Agency's Area III Hydrology criteria. The 100-year flood peak for Kelso Creek is based on FEMA's Kelso Creek Hydrology report.

The following table lists the flows used for Kelso Creek, each of its tributaries, and the combined flows of the tributaries. Note that the 100-year peak flows at the apex of each tributary had to be reduced due to the deposition of sediment between the tributary fan apex and the Kelso Creek floodplain. This results in about an 80% reduction in the peak flow as the tributary flows

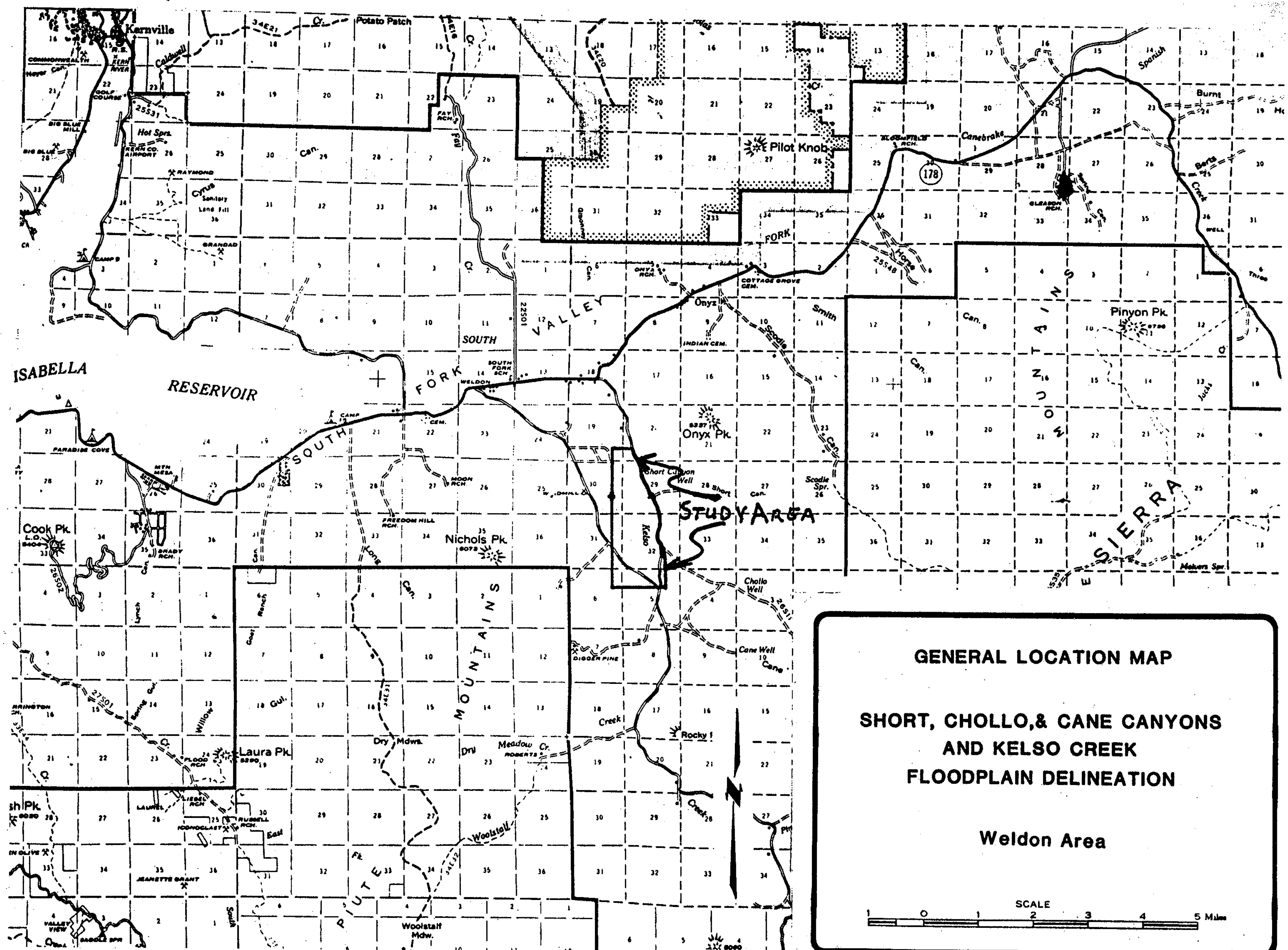
leave their respective fans and travel on the flatter Kelso Creek floodplain. This reduction was observed during the 1984 summer floods on Short and Chollo Canyons.

Caution should be used with these maps. The areas delineated are alluvial fans and washes which are unstable and subject to shifting channels. A large flood in this area could result in a change in the floodplain zones and the 100-year water surface elevations, as occurred in August, 1984.

KELSO CREEK AND SHORT, CHOLLO AND CANE CANYONS HYDROLOGY

STREAM	WATERSHED AREA A (mi)	Q100 (cfs)	REDUCED Q100 USED* (cfs)
Kelso Creek	159.5	22,700	____
Short Canyon	4.43	9,100	1,820
Chollo Cyn. N.	3.24	7,480	____
Chollo S. & Cane Comb.	13.61	15,600	3,120
Chollo S. & Cane split along road	____	____	620
Chollo S. & Cane split along levee	____	____	2,500
Chollo N&S & Cane Comb.	17.12	17,000	3,400
Short, Chollo, & Cane Combined	21.55	19,000	3,800
Short, Chollo, & Cane split toward levee	____	____	2,660
Short, Chollo, & Cane split along Kelso Cr. Rd.	____	____	3,000

* These reduced flows represent an 80% loss in peak flow due to sediment depostion between the tributary fan apex and Kelso Creek Floodplain, as observed during the summer of 1984 floods.



GENERAL LOCATION MAP

SHORT, CHOLLO, & CANE CANYONS AND KELSO CREEK FLOODPLAIN DELINEATION

Weldon Area

SCALE

1 0 1 2 3 4 5 Miles

KELSO CREEK
SHORT CANYON
CHOLLO CANYONS
CANE CANYON

FLOODPLAIN DELINEATION

LIMIT OF STUDY
Trotter St.
Tumbleweed Ln.
Roadrunner Rd.
Sidewalk Ln.
Sage Ln.
SHORT CANYON
Walker Rd.
Chukkar Rd.
Cottontail Ln.
Kelso Creek Rd
LIMIT OF STUDY
Kelso Valley Rd.
CHOLLO CYN N.

CHOLLO, CANE & SHORT CANYONS
FLOODPLAIN–PRIMARY ZONE (FP–P)

FLOODPLAIN–
SECONDARY ZONE
(FP–S)

KELSO CREEK
FLOODPLAIN–PRIMARY
ZONE (FP–P)

(FP–P)
(FP–S)

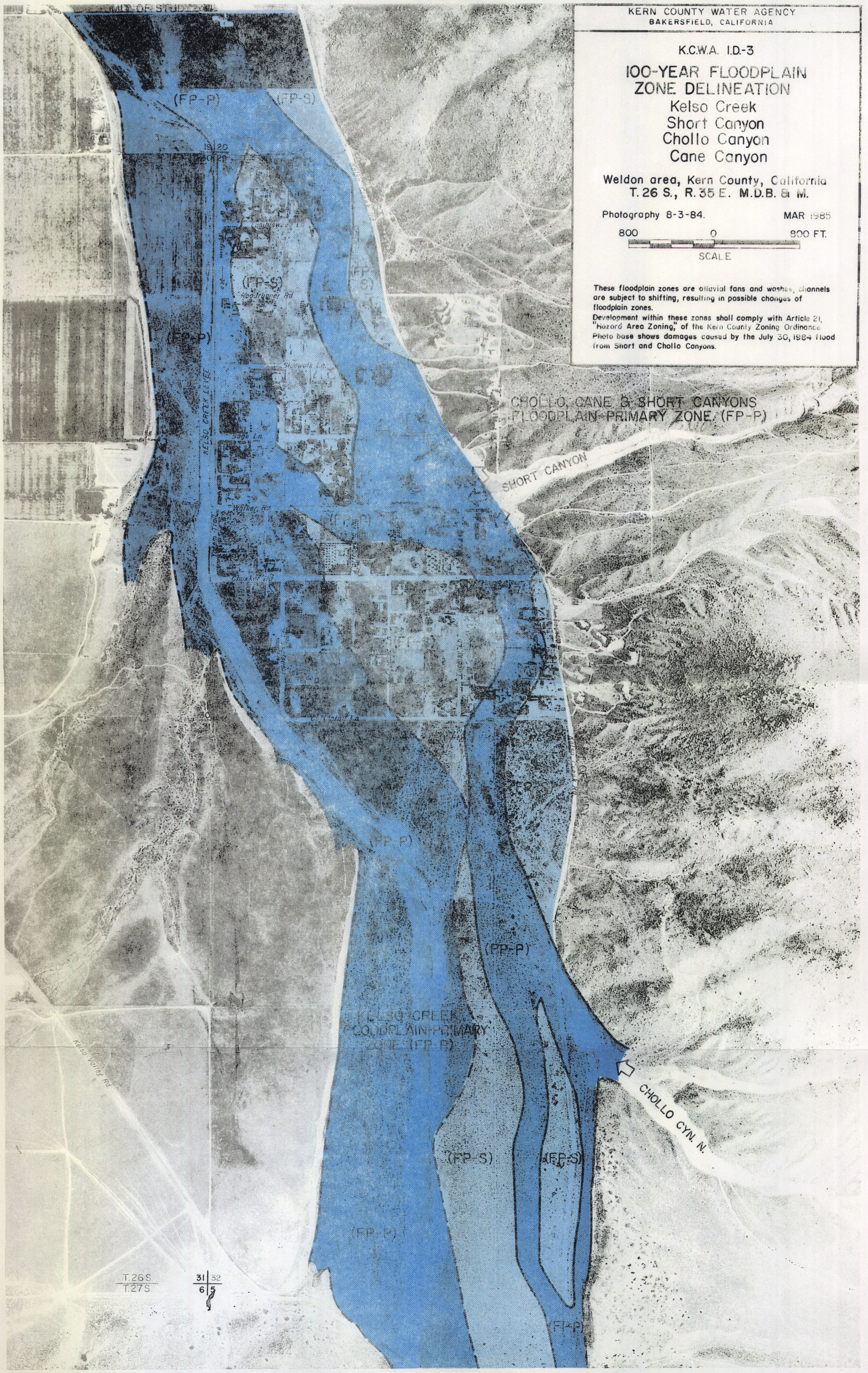
N

400 0 400 FT
SCALE

MARCH 1985

LEGEND

- Kelso Creek Floodplain-Primary Limit
- Short , Chollo and Cane Canyons Floodplain – Primary Limit
- Limit of Study



KERN COUNTY WATER AGENCY
BAKERSFIELD, CALIFORNIA
K.C.W.A. I.D-3
100-YEAR FLOODPLAIN
ZONE DELINEATION
Kelso Creek
Short Canyon
Chollo Canyon
Cane Canyon
Weldon area, Kern County, California
T. 26 S., R. 35 E. M.D.B. & M.
Photography 8-3-84.
MAR 1985
800
0
800 FT.
SCALE
These floodplain zones are alluvial fans and washes, channels are subject to shifting, resulting in possible changes of floodplain zones.
Development within these zones shall comply with Article 21, "Hazard Area Zoning", of the Kern County Zoning Ordinance.
Photo base shows damages caused by the July 30, 1984 flood from Short and Chollo Canyons.
CHOLLO, CANE & SHORT CANYONS
FLOODPLAIN-PRIMARY ZONE (FP-P)
SHORT CANYON
CHOLLO CYN. N.
(FP-P)
(FP-S)
KELSO CREEK LEVEE
Sage Ln
Walker Rd
Chukar Rd
Roadrunner Rd
Kelso Valley Rd
T.26S
T.27S
31 | 32
6 | 5
19 | 20